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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/101,833	01/29/1999	YASUJI HIRAMATSU	PM255101	1115
22850 7590 02/28/2007 OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314			EXAMINER EVANS, GEOFFREY S	
			ART UNIT 1725	PAPER NUMBER
SHORTENED STATUTORY PERIOD OF RESPONSE		NOTIFICATION DATE	DELIVERY MODE	
3 MONTHS		02/28/2007	ELECTRONIC	

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 02/28/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

09/101,833

Applicant(s)

HIRAMATSU, YASUJI

Examiner

Geoffrey S. Evans

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 8 June 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5, 7-11 and 26-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5 and 7-11 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 26-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

1. Claim 29 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. There is no antecedent basis in claim 29 for "the light source" since claim 4 only recites a "laser source".

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1,4,28,30,31, 32,33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. in Japan Patent No. 7-32,183 in view of Otani et al. in Japan Patent No. 7-171,796, Eichelberger in U.S. Patent No. 5,250,843, and Yoshitake in Japan Patent No. 4-157,470, and Yamashita in Japan Patent No. 3-268,316. Okdada et al. disclose drilling with a laser beam emitting microsecond pulses (see paragraph 13) using galvanomirrors (elements 21 and 22) that are controlled by motors, and a table (an X-Y stage, element 27, see paragraph 16). Otani et al. teaches a camera (element 31) for determining the position of a positioning mark in a multilayer printed wiring board, control apparatus(element 32) for generating drive data to move the table to the correct position to from a hole in the workpiece by using the related (and analogous) art of mechanical drilling. Inherently element 32 (NC equipment) has an input section for receiving data and an arithmetic operating section (arithmetic logic unit) for processing data. Eichelberger teaches an X-Y table and stage for holding a

workpiece for processing (see column 18, lines 24-48). Yoshitake(470) teaches using a reflective positioning mark. Yamashita(316) teaches using an internal positioning mark. It would have been obvious to adapt Okada et al. in view of Otani et al., Eichelberger, Yoshitake and Yamashita to provide at least one internal reflective positioning mark inside a printed wiring board to determine the difference between the desired location and orientation of the printed wiring board and the actual position of the printed wiring board.

4. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. in Japan Patent No. 7-32,183 in view of Otani et al. in Japan Patent No. 7-171,796, Eichelberger in U.S. Patent No. 5,250,843, and Yoshitake in Japan Patent No. 4-157,470, and Yamashita in Japan Patent No. 3-268,316 as applied to claim 1 above, and further in view of Japan Utility model 3-50,372. Japan Utility model 3-50,372 teaches having the recognition mark and a circuit both made of copper and simultaneous creation of these elements, and having the mark inside a resin layer. It would have been obvious to adapt Okada et al. in view of Otani et al., Eichelberger, Yoshitake, Yamashita and Japan Utility model 3-50,372 to provide this simultaneous creation to more quickly make the positioning mark and to protect it by having it inside a resin layer.

5. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. in Japan Patent No. 7-32,183 in view of Otani et al. in Japan Patent No. 7-171,796, Eichelberger in U.S. Patent No. 5,250,843, and Yoshitake in Japan Patent No. 4-157,470, and Yamashita in Japan Patent No. 3-268,316 as applied to claim 4

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above, and further in view of Mitsui et al. in Japan Patent No. 7-290,396. Mitsui et al. teaches using a fluorescent light, which is an art recognized equivalent to a light emitting diode for positioning elements. It would have been obvious to adapt Okada et al. in view of Otani et al., Eichelberger, Yoshitake, Yamashita, and Mitsui et al. to provide this to determine the location of the mark on a board.

6. Claim 34 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okada et al. in Japan Patent No. 7-32,183 in view of Otani et al. in Japan Patent No. 7-171,796, Eichelberger in U.S. Patent No. 5,250,843, and Yoshitake in Japan Patent No. 4-157,470, and Yamashita in Japan Patent No. 3-268,316 as applied to claim 4 above, and further in view of DiStefano et al. in U.S. patent No. 5,640,761 or Berg in U.S. Patent No. 5,377,404. DiStefano et al. teaches positioning marks (574,575, see column 30 line 47 to column 31, line 9) on the upper and lower surfaces of a panel. Alternatively Berg teaches alignment marks on layers of a printed circuit board. It would have been obvious to adapt Okada in view of Otani, Eichelberger, Yoshitake, Yamashita and DiStefano et al. or Berg to provide this to properly align the layers in a printed wiring board prior to laser drilling.

7. Applicant's arguments with respect to claims of record have been considered but are moot in view of the new ground(s) of rejection.

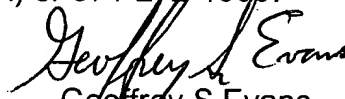
8. Claims 5,7,8,9,10,11 are allowed.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Geoffrey S. Evans whose telephone number is (571)-

272-1174. The examiner can normally be reached on Mon-Fri 6:30AM to 4:00 PM, alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on (571)-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


Geoffrey S Evans
Primary Examiner
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GSE